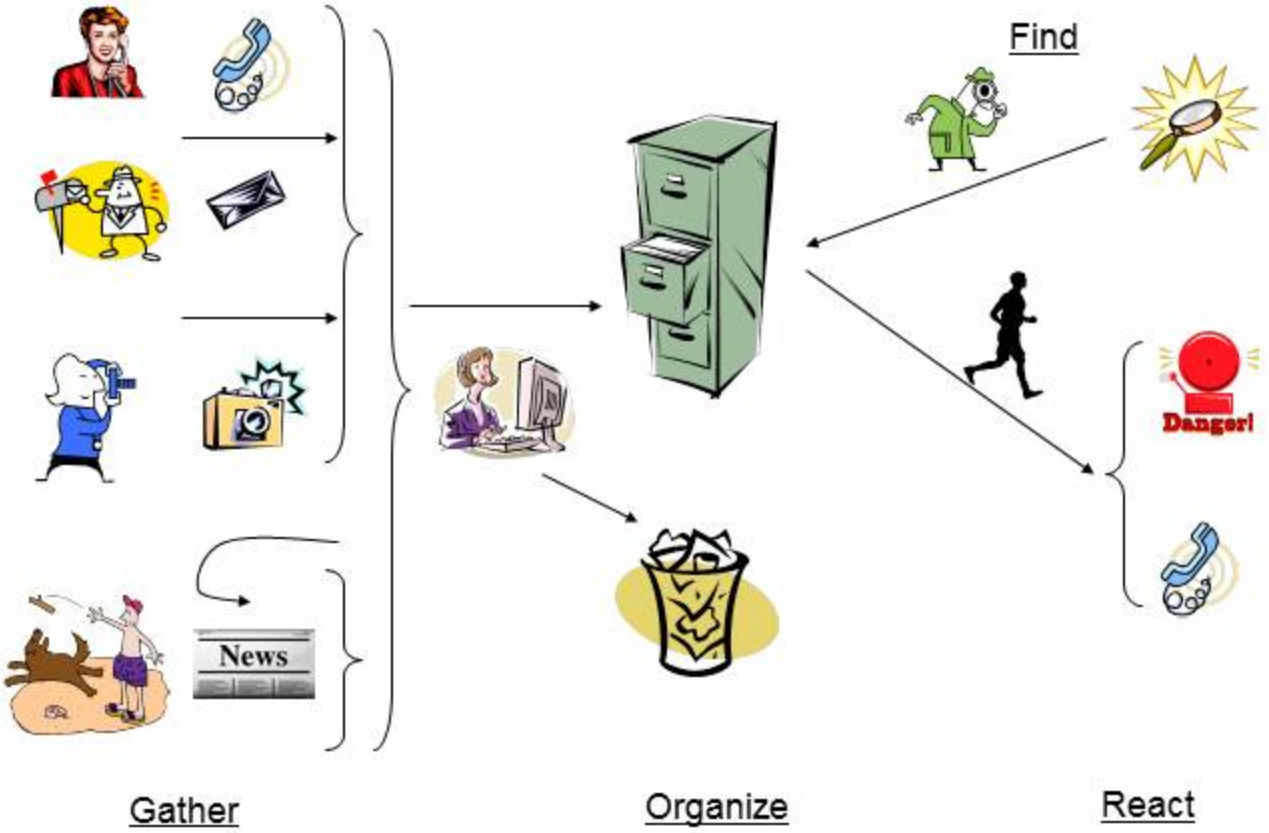
WinFS Rules

Praveen Seshadri

End-user value of rich storage



How does WinFS/LH add value?

- Because I can organize data better?
  - I really want to relate each of my photos to a calendar entry!
- Because I can find the data on my desktop?
  - I really want to find documents from all people who I'm meeting with tomorrow!
- WinFS provides a rich data model, but….
  - The real problem is **information overload**.
  - I wish I could tell the computer what to do instead of doing it myself

Automation with customization is the killer app for WinFS
By the end-user
Over all data
In every application

Outline of the talk

- What can the end-user do? -- Demos
  - Querying of data – through logical data views
  - Organization of data – through automation rules
  - Customization of applications

- What are the elements of the rules platform?
  - End-user programming model
  - Common UX
  - Data model integration with the WinFS schema
  - API integration with the WinFS API
  - Execution using the WinFS query processor

End-User Programming Model

ON input IF condition THEN results

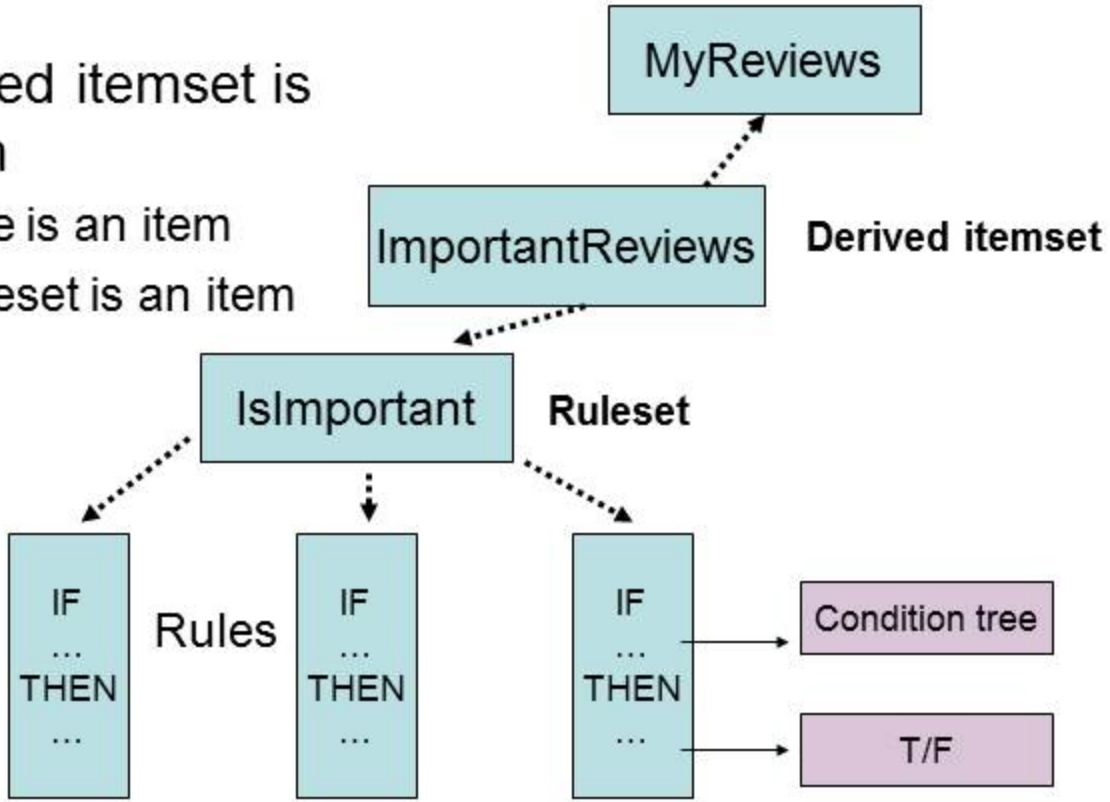
- Rule
  - Every rule has a signature defining input and result types
  - Input is a schematized WinFS item *
  - Condition is a Boolean expression
  - Allowed base conditions are driven by item schema
  - Rich set of conditions allowed
- RuleSet
  - A set of rules to apply together
  - Conflict resolution (eg. based on priority order) across rule results
  - RuleSet is the “deployable” unit of logic
- A RuleSet is a declarative function

End-user Queries as rules

- An end-user query is:
  - A ruleset whose result type is Boolean (t/f)
  - An input item scope
- An end-user query defines a “derived itemset”
  - It acts like a read-only WinFS collection
- A derived itemset is stored as an item
  - It is persisted as a structured object
  - It can be synchronized like any other item
  - It is managed, secured, backed-up, etc like any other item
  - The queries can themselves be queried

End-user Queries as Items

- A derived itemset is an item
  - A rule is an item
  - A ruleset is an item

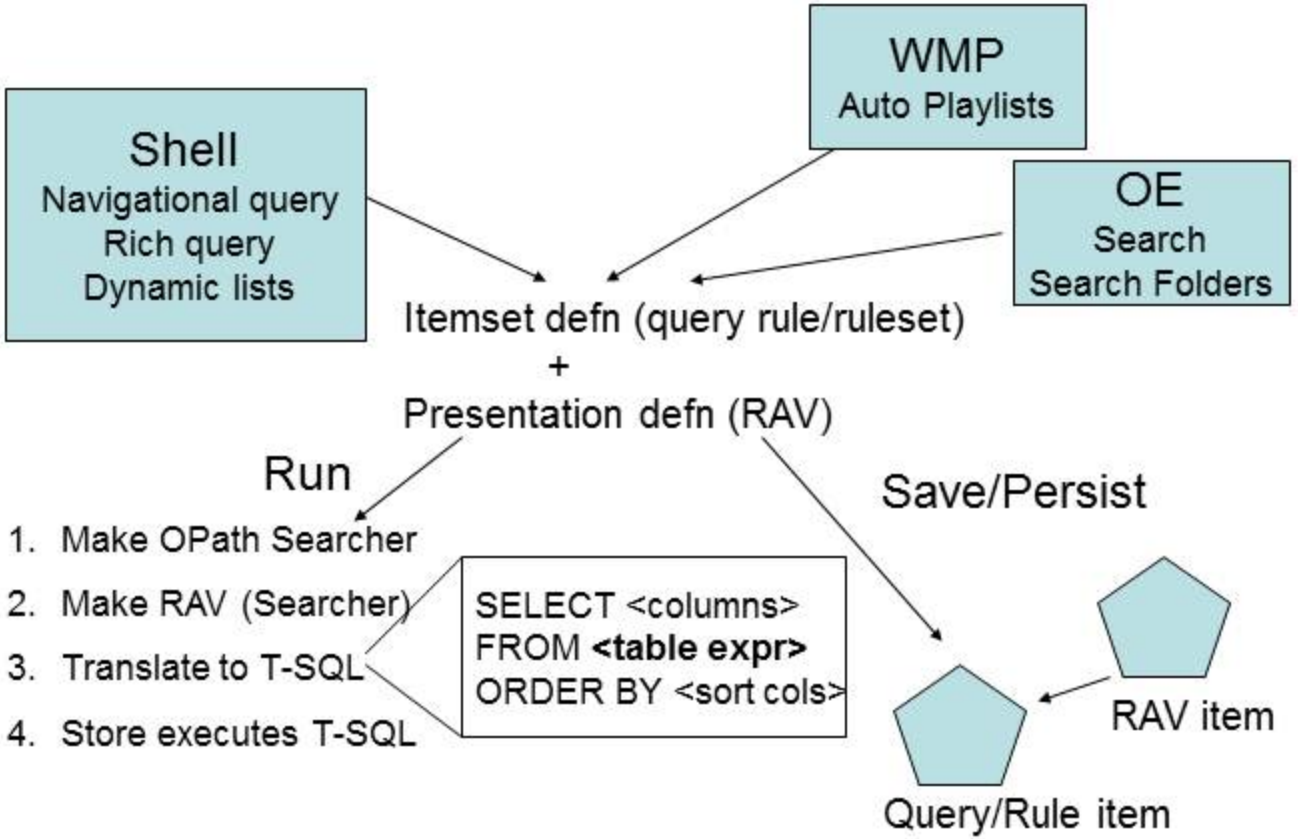


Composition & Sharing

- Composition:
  - A query algebra over itemsets
    - Scope composition: ImportantReviews can be the input scope for another derived itemset
    - Condition composition: “Find all ImportantReviews authored by any of MyFriends”
  - Richer composition
    - Rulesets as condition filters -- IsImportant
    - Virtual values – NextMeeting, HighestMailPriority
- Sharing:
  - Rules can be shared across rulesets
  - Rulesets can be shared across derived itemsets
    - Useful for corporate deployment scenarios

How does it work?

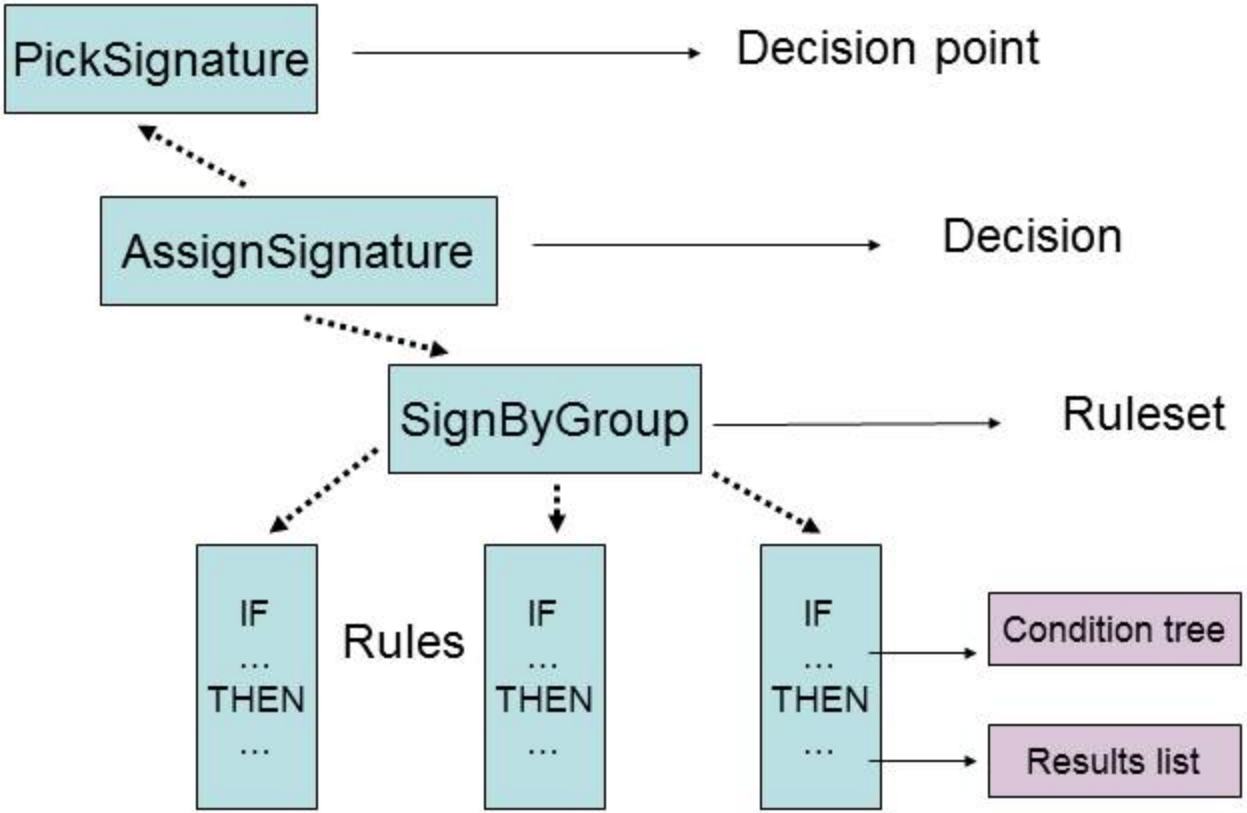
- Basic model (for queries and all other uses of rules)
  - Rules require data matching – joins, indexes
  - Use the SQL query processor as the real engine
  - Provide rule semantics in a translation layer
- Derived itemsets are accessed via OPath
  - No difference in developer experience


WMP
Auto Playlists
Shell
Navigational query
Rich query
Dynamic lists
OE
Search
Search Folders
Itemset defn (query rule/ruleset)
+
Presentation defn (RAV)
Run
Save/Persist
1. Make OPath Searcher
2. Make RAV (Searcher)
3. Translate to T-SQL
4. Store executes T-SQL
SELECT <columns>
FROM <table expr>
ORDER BY <sort cols>
RAV item
Query/Rule item

Decision Rules

- Rules whose results can be more general than true/false
- Applied at application interceptor “events”.
  - E.g. Pick a signature file for a mail sent with Outlook
- Invoked synchronously
  - “Decision point” WinFS item used to define the event
  - A ruleset captures the end-user decision logic
  - The rules platform maintains the association of ruleset to decision point
  - The application invokes the decision point, and then acts upon the decision

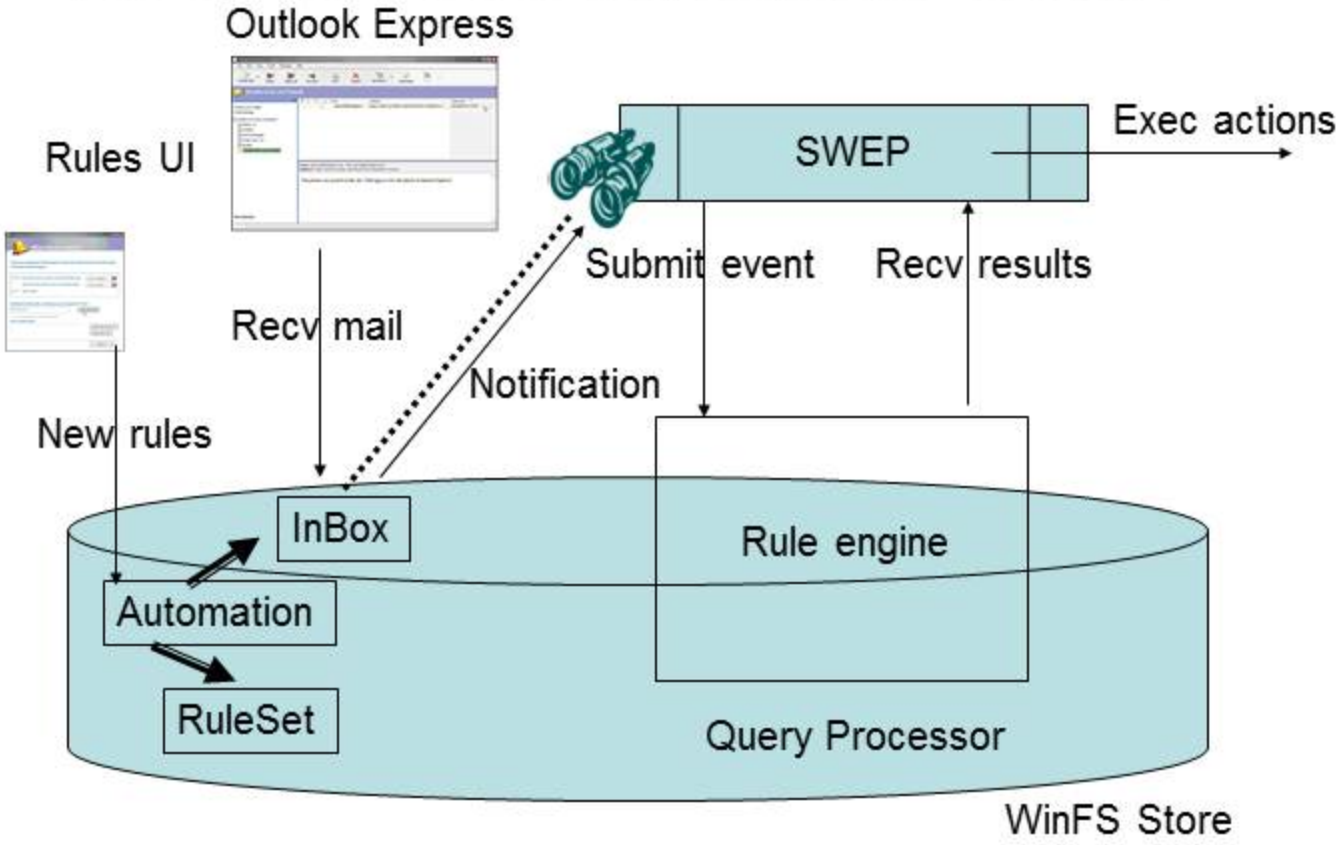
End-user Decisions as Items



Automation rules

- Decision points associated with the WinFS "active application"
  - The decisions are invoked asynchronously in response to data change events
    - Eg. an item got added to a particular folder
  - The results of the decisions correspond to methods/verbs/actions to invoke on the item
    - Eg: set Reviewer to Praveen
- Implemented by the "SWEP" component
  - Hosted in an app/service/Shell?

How does Automation work?



Questions?